

Journal of

Computational Physics

VOLUME 90, 1990



ACADEMIC PRESS, INC.

Harcourt Brace Jovanovich, Publishers

San Diego New York Boston

London Sydney Tokyo Toronto

Copyright © 1990 by Academic Press, Inc.
All Rights Reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per copy fee through the Copyright Clearance Center, Inc. (27 Congress Street, Salem, Massachusetts 01970), for copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Copy fees for pre-1990 articles are as shown on the article title pages; if no fee code appears on the title page, the copy fee is the same as for current articles.

0021-9991/90 \$3.00

This journal is printed on acid-free paper.



Printed by Catherine Press, Ltd., Brugge, Belgium

CONTENTS OF VOLUME 90

NUMBER 1, SEPTEMBER 1990

G. CHESSHIRE AND W. D. HENSHAW. Composite Overlapping Meshes for the Solution of Partial Differential Equations	1
P. DEGOND AND F. GUYOT-DELAURENS. Particle Simulations of the Semiconductor Boltzmann Equation for One-Dimensional Inhomogeneous Structures	65
M. KIRBY, J. BORIS, AND L. SIROVICH. An Eigenfunction Analysis of Axisymmetric Jet Flow.	98
J. M. DELAURENTIS AND L. A. ROMERO. A Monte Carlo Method for Poisson's Equation	123
THOMAS W. ROBERTS. The Behavior of Flux Difference Splitting Schemes near Slowly Moving Shock Waves.	141
GUNTER DUECK AND TOBIAS SCHEUER. Threshold Accepting: A General Purpose Optimization Algorithm Appearing Superior to Simulated Annealing	161
NATHANIEL WHITAKER. Numerical Solution of the Hele-Shaw Equations	176
A. J. HUIZING AND B. L. G. BAKKER. The Solution of Faddeev Integral Equations for Three-Body Scattering by Means of <i>B</i> -Splines.	200
JOHN W. GOODRICH, KARL GUSTAFSON, AND KADOSA HALASI. Hopf Bifurcation in the Driven Cavity.	219

NOTE

JOSÉ M ^a . MARTÍ, JOSÉ M ^a . IBÁÑEZ, AND JUAN A. MIRALLES. Stellar Hydrodynamics with Glaister's Riemann Solver: An Approach to the Stellar Collapse	262
ABSTRACTS OF PAPERS TO APPEAR IN FUTURE ISSUES	267

NUMBER 2, OCTOBER 1990

DIMITRI J. MAVRIPLIS. Adaptive Mesh Generation for Viscous Flows Using Delaunay Triangulation	271
ALEX FRIEDMAN. A Second-Order Implicit Particle Mover with Adjustable Damping	292
A. F. BAKKER, G. H. GILMER, M. H. GRABOW, AND K. THOMPSON. A Special Purpose Computer for Molecular Dynamics Calculations	313
WILLIAM LAYTON. On the Principal Axes of Diffusion in Difference Schemes for 2D Transport Problems.	336

A. BRANDT AND A. A. LUBRECHT. Multilevel Matrix Multiplication and Fast Solution of Integral Equations	348
JIAN-SHUN SHUEN, MENG-SING LIOU, AND BRAM VAN LEER. Inviscid Flux-Splitting Algorithms for Real Gases with Non-equilibrium Chemistry . .	371
BALASUBRAMANIAM RAMASWAMY. Numerical Simulation of Unsteady Viscous Free Surface Flow	396
A. GHIZZO, P. BERTRAND, M. M. SHOUCRI, T. W. JOHNSTON, E. FIJALKOW, AND M. R. FEIX. A Vlasov Code for the Numerical Simulation of Stimulated Raman Scattering	431
M. S. HALL. A Comparison of First and Second Order Rezoned and Lagrangian Godunov Solutions	458
CHARLOTTE FROESE FISCHER AND W. GUO. Spline Algorithms for the Hartree-Fock Equation for the Helium Ground State	486

NOTE

D. P. O'LEARY AND G. W. STEWART. Computing the Eigenvalues and Eigenvectors of Symmetric Arrowhead Matrices	497
ABSTRACTS OF PAPERS TO APPEAR IN FUTURE ISSUES	506
AUTHOR INDEX FOR VOLUME 90	510